

WO 2004/037698

PCT/DE2003/003470

Claims

1. A former (01) of a web-producing or web-processing machine, having two angularly converging leg areas (03) which, in an area of their surface acting together with a web (06) to be folded, have a plurality of openings (03) for the exit of a fluid under pressure, characterized in that the openings (10) are embodied as micro-openings (10) with an unchangeable diameter of less than 500 μm .

2. A former (01) of a web-producing or web-processing machine, characterized in that, at least in an area of its surface which acts together with a web (06) which is to be folded, the former (01) has a porous material (09), through which a fluid can flow.

3. The former (01) in accordance with claim 2, characterized in that on its surface the micro-porous material (09) has a plurality of micro-openings (10) constituted by open pores for the exit of a fluid under pressure.

4. The former (01) in accordance with claim 3, characterized in that at least two angularly converging leg areas (03) have micro-openings (10) in an area of their surface which acts together with a web (06) to be folded.

5. The former (01) in accordance with claim 1 or 4, characterized in that, in addition to the micro-openings (10)

WO 2004/037698

PCT/DE2003/003470

in the leg areas (03), the former (01) has micro-openings (10) in a surface of a nose section (04).

6. The former (01) in accordance with claim 1 and/or 5, characterized in that the micro-openings (03) are designed as open pores of a porous material (09), through which a fluid flows.

7. The former (01) in accordance with claim 2 or 5, characterized in that the pores of the fluid-permeable porous material (09) have a mean diameter of 5 to 50 μm , in particular 10 to 30 μm .

8. The former (01) in accordance with claim 2 or 6, characterized in that the porous material (09) is embodied as an an open-pored sinter material (09), in particular as sinter metal.

9. The former (01) in accordance with claim 2 or 6, characterized in that the micro-porous material (09) is embodied as a layer (09) on a load-bearing, fluid-permeable at least in parts, support body (08, 08'), which encloses a hollow space (07, 07').

10. The former (01) in accordance with claim 9, characterized in that, on its side facing the layer (09), the support (08) has at least one support surface connected with the layer (09), as well as a plurality of openings for feeding a fluid into the layer (09).

WO 2004/037698

PCT/DE2003/003470

11. The former (01) in accordance with claim 10, characterized in that in the area of the support surface, the layer (09) has a thickness of less than 1 mm, in particular between 0.05 mm to 0.3 mm.

12. The former (01) in accordance with claim 9, characterized in that, over its length and width acting together with the layer (09), the support body (08) has a plurality of passages (15), in particular those which are not connected.

13. The former (01) in accordance with claim 9, characterized in that a wall thickness of the support body (08), or at least of the wall supporting the layer (09), is greater than 3 mm, in particular greater than 5 mm.

14. The former (01) in accordance with claim 9, characterized in that the support body (08) is made, at least in part, of a porous material (09) with better air permeability than the micro-porous material (09).

15. The former (01) in accordance with claim 9, characterized in that the support body (08) is made, at least in part, of a flat material, which encloses a hollow chamber (07) and is provided with openings.

16. The former (01) in accordance with claim 9, characterized in that in the leg area (03) the support body (08) is embodied as a tube (08) provided with passages (15).

WO 2004/037698

PCT/DE2003/003470

17. The former (01) in accordance with claim 2 or 6, characterized in that the micro-porous material (09) has a layer thickness which at least corresponds to the distance between adjoining passages (15) of the support (08).

18. The former (01) in accordance with claim 1 and/or 5, characterized in that the openings (10) are embodied as outward directed micro-openings (10) of micro-bores (12) in a wall (13, 13'), which borders the former (01) outward toward the web (06).

19. The former (01) in accordance with claim 18, characterized in that a diameter of the openings (03) is less than or equal to 300 μm , in particular between 60 and 150 μm .

20. The former (01) in accordance with claim 18, characterized in that a wall thickness of the wall (13) lies between 0.2 to 3.0 mm.

21. The former (01) in accordance with claim 18, characterized in that a hole density, i.e. a number of openings (10) per unit of area, of the surface provided with micro-bores (10) is at least 0.2 / mm^2 .

22. The former (01) in accordance with claim 1 or 3, characterized in that 1 to 20 standard cubic meters of air per hour exit from a square meter of the surface having the openings (10).

WO 2004/037698

PCT/DE2003/003470

23. The former (01) in accordance with claim 1 or 3, characterized in that 2 to 15, in particular 3 to 7, standard cubic meters of air per hour exit from a square meter of the surface having the openings (10).

24. The former (01) in accordance with claim 2 or 6, characterized in that the porous material (09) is charged from the inside with an excess pressure of at least 1 bar.

25. The former (01) in accordance with claim 2 or 6, characterized in that the porous material (09) is charged with the fluid from the inside with an excess pressure of more than 4 bar, in particular 5 to 7 bar.

26. The former (01) in accordance with claim 1 or 2, characterized in that a feed line for supplying the fluid to the former (01) has an interior diameter of less than 100 mm², in particular between 10 and 60 mm².

27. The former (01) in accordance with claim 1 or 2, characterized in that the fluid under pressure is constituted by compressed air.

28. The former (01) in accordance with claim 1 or 3, characterized in that a part of the former (01) supporting the micro-openings (10) is embodied as a releasable insert on a support.

WO 2004/037698

PCT/DE2003/003470

29. The former (01) in accordance with claim 5, characterized in that the permeability to a fluid per unit of area in the nose section (04) is designed to be different from that in the leg area (03).

30. The former (01) in accordance with claim 5, characterized in that the permeability to a fluid per unit of area in the nose section (04) is higher than in the leg area (03).

31. The former (01) in accordance with claim 5, characterized in that a common hollow chamber (07) has been formed for supplying the micro-bores (10) in the leg area (03), as well as in the nose section (04), with fluid.

32. The former (01) in accordance with claim 5, characterized in that separate hollow chambers (07) have been formed for supplying the micro-bores (10) in the leg area (03), as well as in the nose section (04), with fluid.

33. The former (01) in accordance with claim 5 and one of claims 2 or 6, characterized in that the same micro-porous material (09) is provided in the leg area (03) and the nose section (04).

34. The former (01) in accordance with claim 5 and one of claims 2 or 6, characterized in that micro-porous

WO 2004/037698

PCT/DE2003/003470

materials (09) which are different from each other are provided in the leg area (03) and the nose section (04).

35. The former (01) in accordance with claim 32 or 34, characterized in that the differing micro-porous materials (09), whose layer thickness and/or different pressure for the leg area (03) and the nose section (04), are embodied in such a way that an air outlet flow per unit of area is greater in the nose section (04) than the one in the leg area (03).

36. The former (01) in accordance with claim 5 and 18, characterized in that the same micro-perforation with micro-pores (12) is provided in the leg area (03) and the nose section (04).

37. The former (01) in accordance with claim 5 and 18, characterized in that micro-perforations with micro-pores (12) are provided in the leg area (03) and the nose section (04), which are different from each other.

38. The former (01) in accordance with claim 32 or 37, characterized in that the different micro-perforation, its hole density, its hole diameter and/or a different pressure for the leg area (03) and the nose section (04) are designed in such a way, that an air outlet flow per unit of area is greater in the nose section (04) than the one in the leg area (03).

WO 2004/037698

PCT/DE2003/003470

39. The former (01) in accordance with claim 35 or 38, characterized in that the air exit in the leg area (03) lies between 2 to 15 standard cubic meters per m^2 , and the one in the nose section (04) between 7 and 20 standard cubic meters per m^2 , wherein the latter is always larger than the former.